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ABSTRACT

A project was conducted to develop a series of studies that will enable one to measure attitudes with reasonable accuracy. Nine stages of project activity were identified: design optical scanning form; write computer program to analyze data; determine adjective pairs; factor scales on elementary pupils; factor scales on high school students and adults; study psychometric properties of the instrument; factor graphic scales on elementary pupils; develop semantic atlas; and study relationships between attitudes and school performance. Identification of adjective pairs and factoring of scales followed the basic techniques used by Osgood. There are three sources of student data: a random sample drawn for factoring purposes, the pupil populations of projects in which an examination of attitudes is a part of the evaluation, and the pupil populations of small studies conducted in individual schools. The ultimate impact of the project is intended to be educational, i.e., it will permit the investigation of relationships between attitudes and school performance. Nine charts are included. (CK)

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A SYSTEMATIC STUDY OF ATTITUDES USING THE SEMANTIC DIFFERENTIAL: THE MODEL

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The School District of Philadelphia

Paper presented at American Educational Research Association, Chicago, Illinois April 1972

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Irvin J. Farber and James E. Ayrer, The School District of Philadelphia

Concern with attitudes, be it "creating" them, "changing" them, or "improving" them, is a part of many projects undertaken within school systems. It is implied that "improved" attitudes toward school will somehow result in "better" school performance. Moreover, the attitudes of the teacher are often thought to be related to how pupils fare in school. Understanding the values and attitudes of pupils is thought to be necessary for effective rapport.

These, and related questions, can be fully investigated only when appropriate instrumentation is available. The Semantic Differential appears to be the most promising technique for this purpose. Since its development by Osgood, it has been used in a wide variety of studies and in many different cultures and language groups.

Because the Semantic Differential is a technique rather than a single instrument, it has great flexibility. It is this flexibility, however, which prevents our use of the instrument "off the shelf." Scales appropriate for school children must be developed. One cannot legitimately assume that scales factored by Osgood on University of Illinois students over a decade ago can permit inner-city school children to express their feelings. Additional "spade-work" is needed to identify an appropriate set of scales.

It is to these needs, then, that the current project addresses itself. In brief: The main purpose of this project is to develop a series of studies that will enable us to measure attitudes with reasonable accuracy so that the relationship between attitudes and school performance can then be investigated. (An additional short range purpose is to provide data for program evaluation studies in which student attitude is a variable to be examined.)

The first requirement of the attitude measurement project was to outline the major stages of activity. Overall strategy was based on - but not completely identical to - the work of Osgood and Di Vesta. For each of the major stages a work-breakdown was made detailing the tasks to be accomplished, and a simple network was drawn to show the necessary flow of activity.

An analysis was made of the needs and constraints related to pursuing this project within the School District of Philadelphia. Nine major stages of project activity were identified:

1. Design Optical Scanning Form
2. Write computer program to analyze data
3. Determine adjective pairs
4. Factor scales on elementary pupils
5. Factor scales on high school students; adults
6. Study psychometric properties of the instrument
7. Factor graphic scales on elementary pupils
8. Develop semantic atlas
9. Study relationships between attitudes and school performance

The first two stages were a practical necessity. Since, in studies of any appreciable size, the cost of keypunching was found to be prohibitive, a scannable form was needed before data collection was possible. Again, if unique programming had to be done for each study, the Semantic Differential would not be feasable for our use. The first step, then, was to provide a convenient, relatively economical means of collecting and processing semantic differential data.

A subsequent paper in this session will describe in detail the Optical Scanning Form and the program. All that need be noted here is that they had to provide a maximum of flexibility with a minimum of specific handling or programming.

Identification of adjective pairs and factoring of scales followed, for the most part, the basic techniques used by Osgood. These, too, will be described in detail in papers to follow.

The remaining stages of this project are in varying stages of development. Our policy has been to think through the details of each stage as we are ready for it. Hopefully, this will give us the opportunity to take advantage of what has happened in the field by then.

A word is now in order regarding the planning process. Simple flow-charts have been constructed indicating the necessary steps of each stage of this project. (The charts are appended to this paper.) The need for these charts becomes apparent when one realizes that this project is an additional duty for all of those involved. Though we are firmly convinced of its importance, and though we enjoy the support of our superiors, the reality is that we must intersperse project activities among the normal everyday "panic-button" requirements of a big city research office.

We do not view the flow-charts as being carved in stone. They exist to give us a sense of direction and to help us keep the total project in perspective. They are modified or restructured as needed.

The data for this project is being, and/or will be, gathered from the student body and faculty of the School District of Philadelphia. There will be three prime sources of student data within this structure:

1. A random sample drawn for factoring purposes.
2. The pupil populations of projects in which an examination of attitude is a part of the evaluation.
3. The pupil populations of small studies conducted in individual schools.

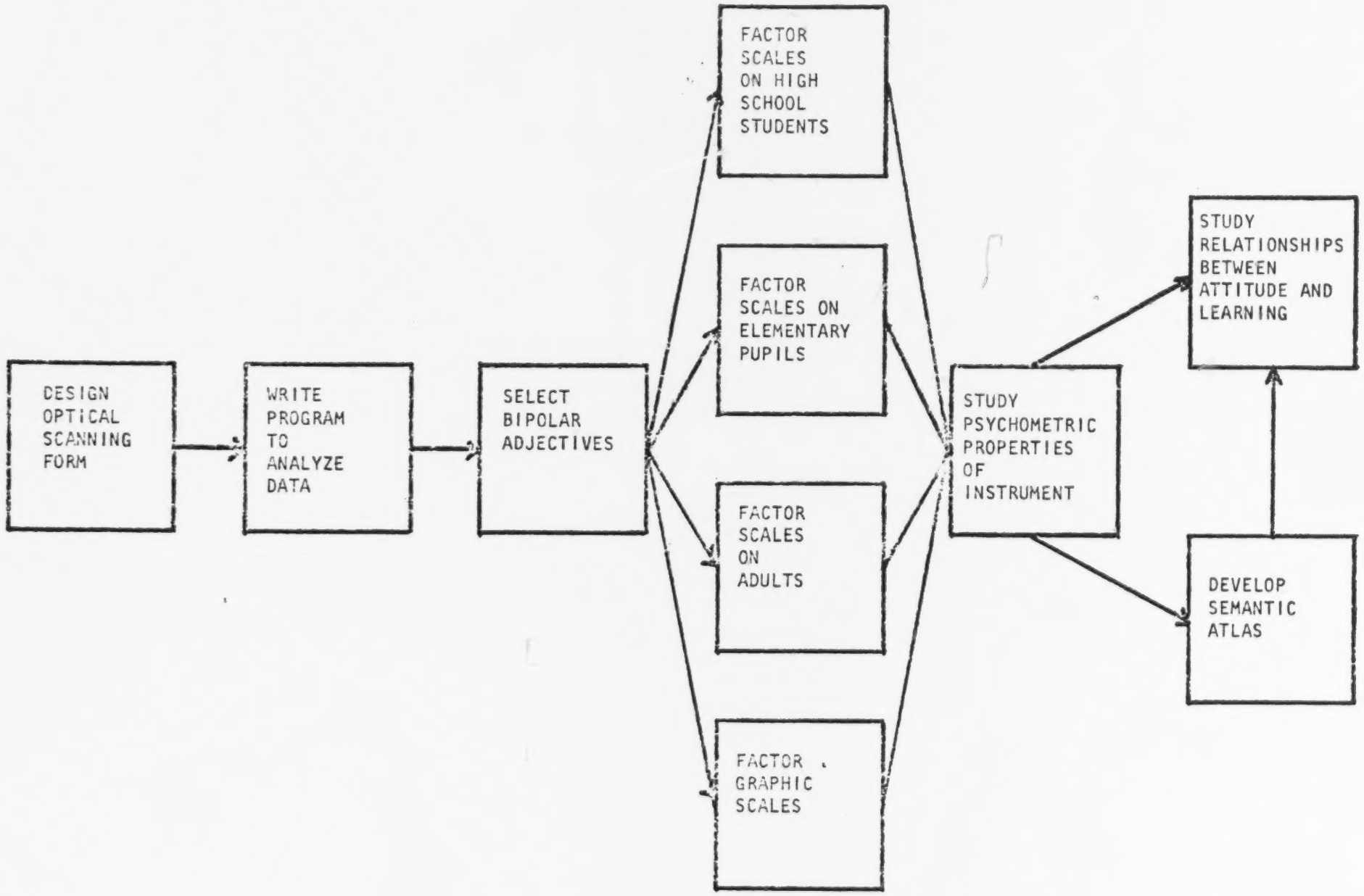
This project is considered to have both scientific and educational significance. It will permit an examination of attitudes both across school grades (i.e., age levels) and across socioeconomic groups. In a sense it is an offshoot of Jakobovits' Cross-Cultural studies, but within a large city

school system. Its ultimate impact, however, should be educational. It will permit the investigation of relationships between attitudes and school performance. An effort can be made to examine a number of important questions such as:

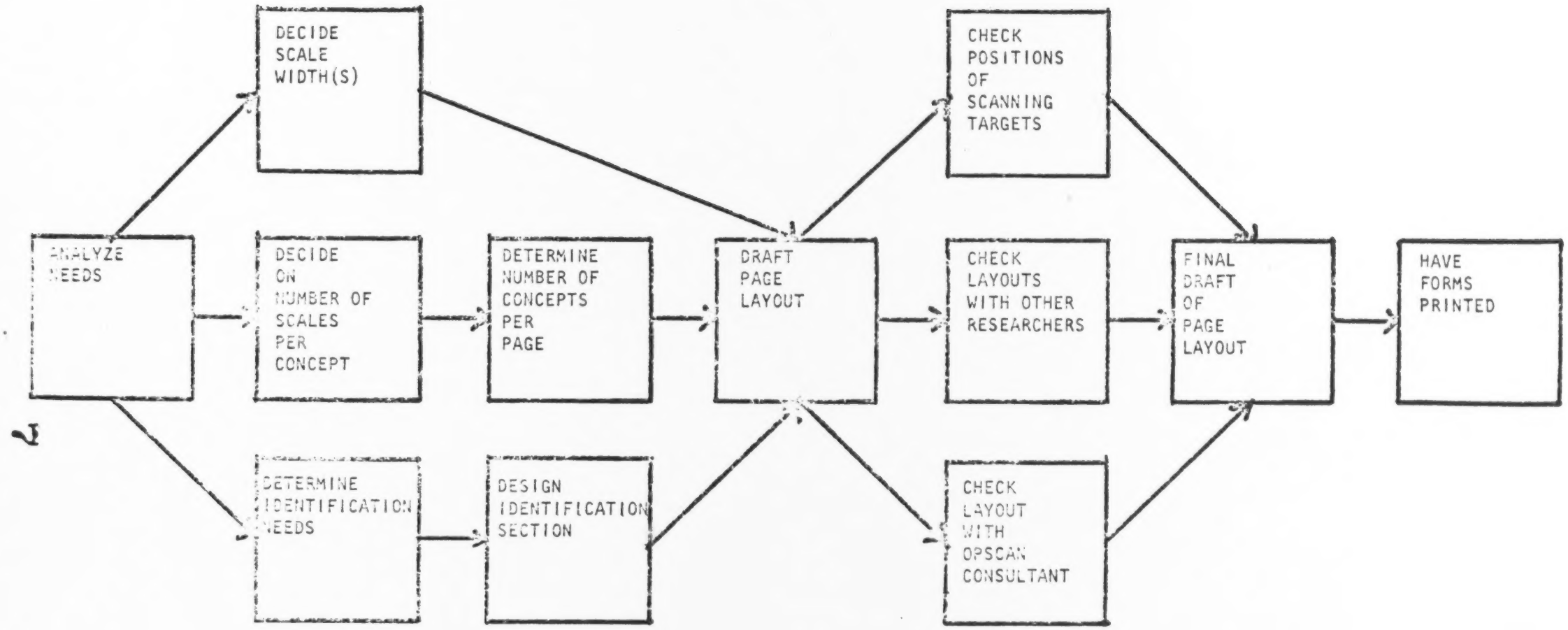
.Are pupils' attitudes related to their performance?
.Will a change in one yield a change in the other?
.Are teacher attitudes related to pupil performance?
.Is pupil attitude affected by teaching behavior?

These and a host of other questions can, and need to be, examined. First, however, it is necessary to complete the "spadework" of instrument development which represents the initial stages of this project and the content of the other papers submitted.

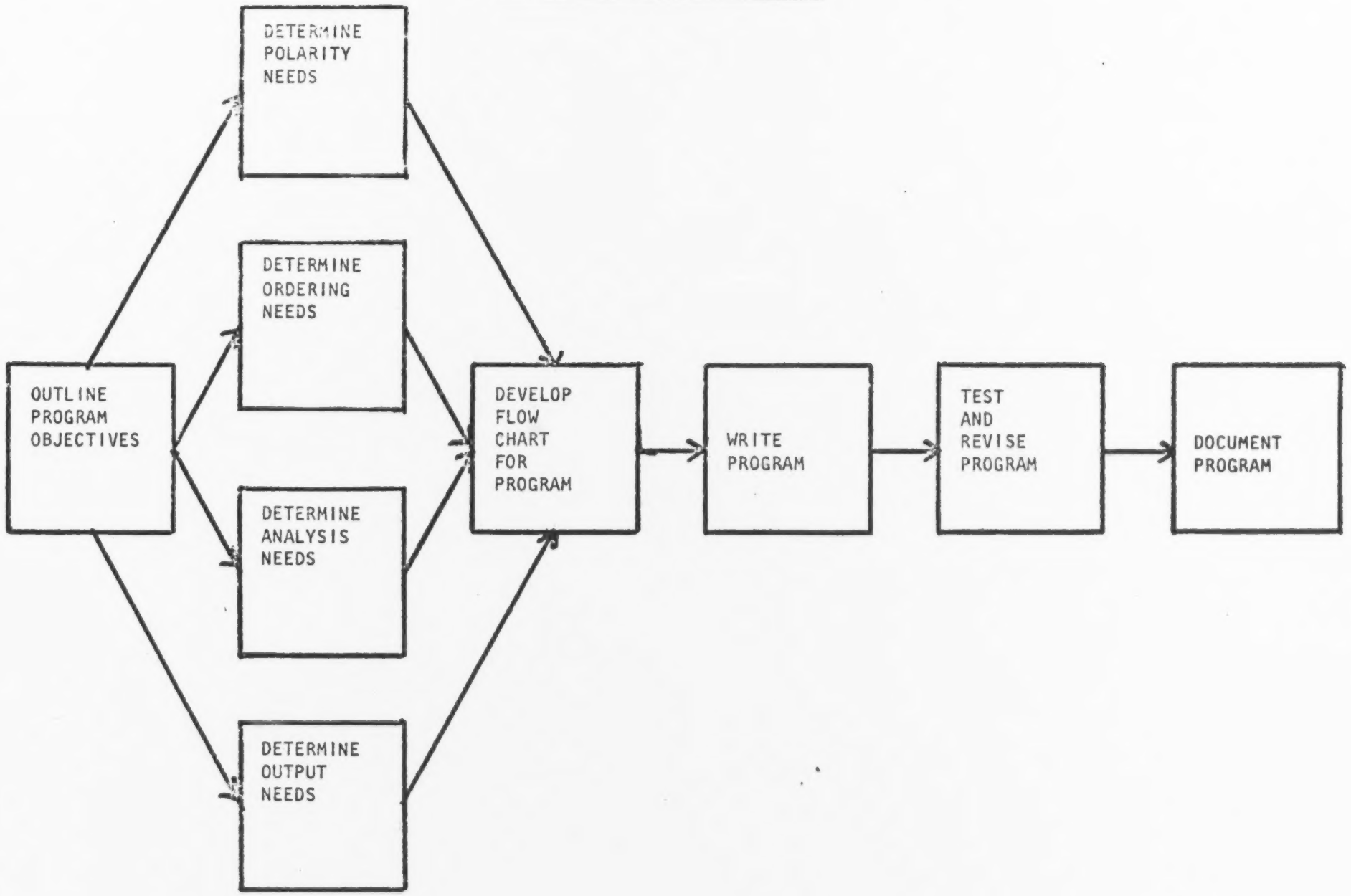
MAJOR STAGES IN THE STUDY OF ATTITUDES USING THE SEMANTIC DIFFERENTIAL APPROACH


DESIGN OPTICAL SCANNING FORM
WRITE PROGRAM TO ANALYZE DATA
SELECT BIPOLAR ADJECTIVES
FACTOR SCALES ON HIGH SCHOOL STUDENTS
FACTOR SCALES ON ELEMENTARY PUPILS
FACTOR SCALES ON ADULTS
FACTOR GRAPHIC SCALES
STUDY PSYCHOMETRIC PROPERTIES OF INSTRUMENT
STUDY RELATIONSHIPS BETWEEN ATTITUDE AND LEARNING
DEVELOP SEMANTIC ATLAS

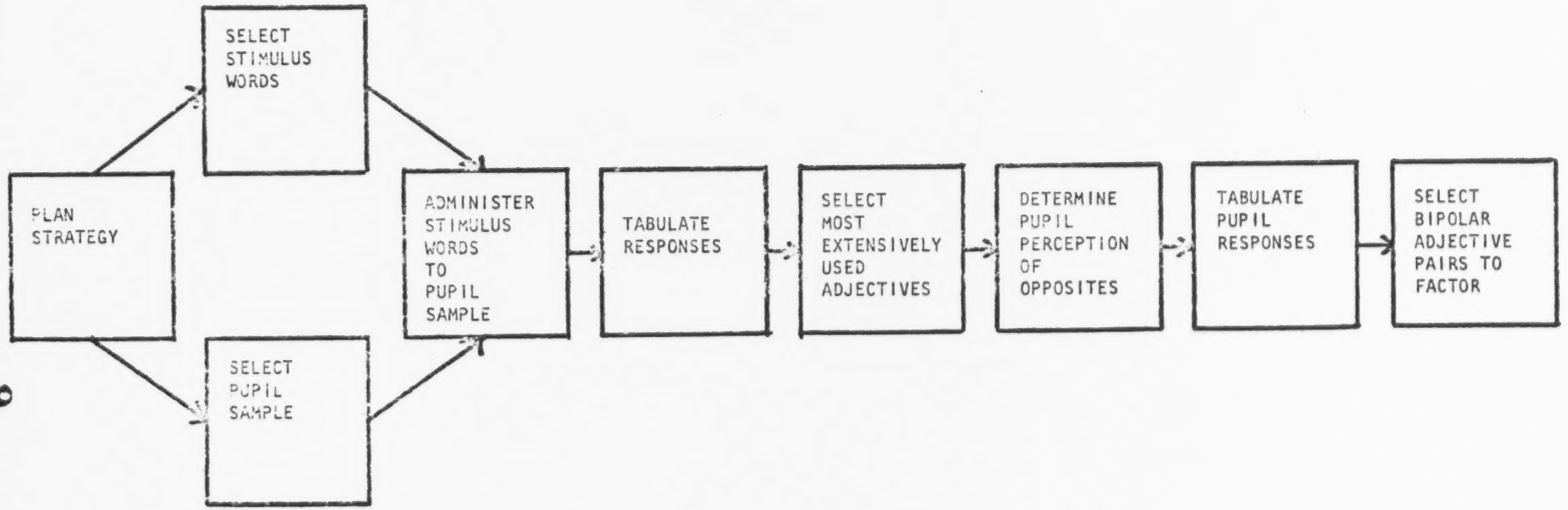
1. DESIGN OPTICAL SCANNING FORM


DECIDE SCALE WIDTH(S)
CHECK POSITIONS OF SCANNING TARGETS
ANALYZE NEEDS
DECIDE ON NUMBER OF SCALES PER CONCEPT
DETERMINE NUMBER OF CONCEPTS PER PAGE
DRAFT PAGE LAYOUT
CHECK LAYOUTS WITH OTHER RESEARCHERS
FINAL DRAFT OF PAGE LAYOUT
HAVE FORMS PRINTED
DETERMINE IDENTIFICATION NEEDS
DESIGN IDENTIFICATION SECTION
CHECK LAYOUT WITH OPSCAN CONSULTANT

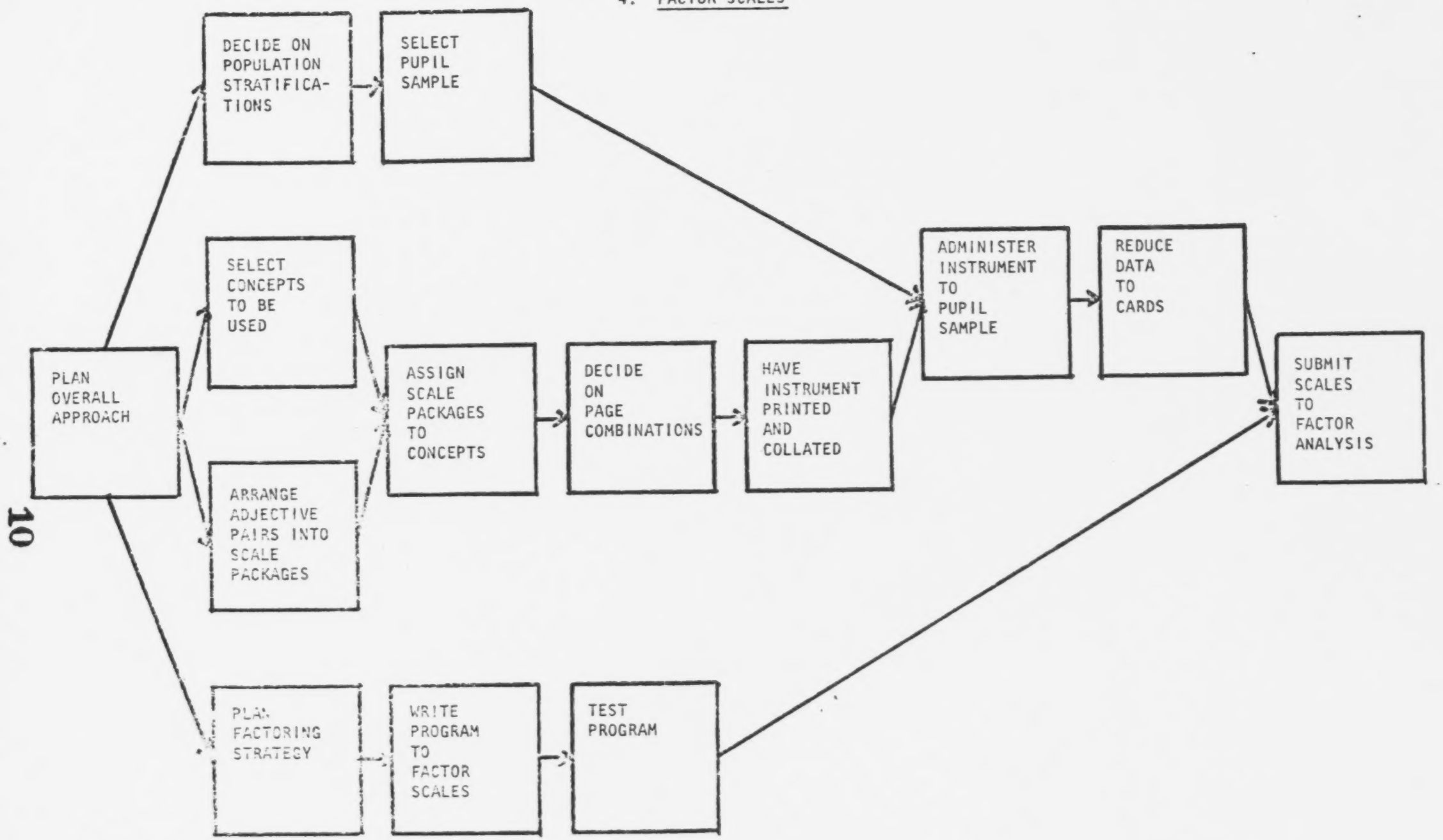
2. WRITE PROGRAM TO ANALYZE DATA



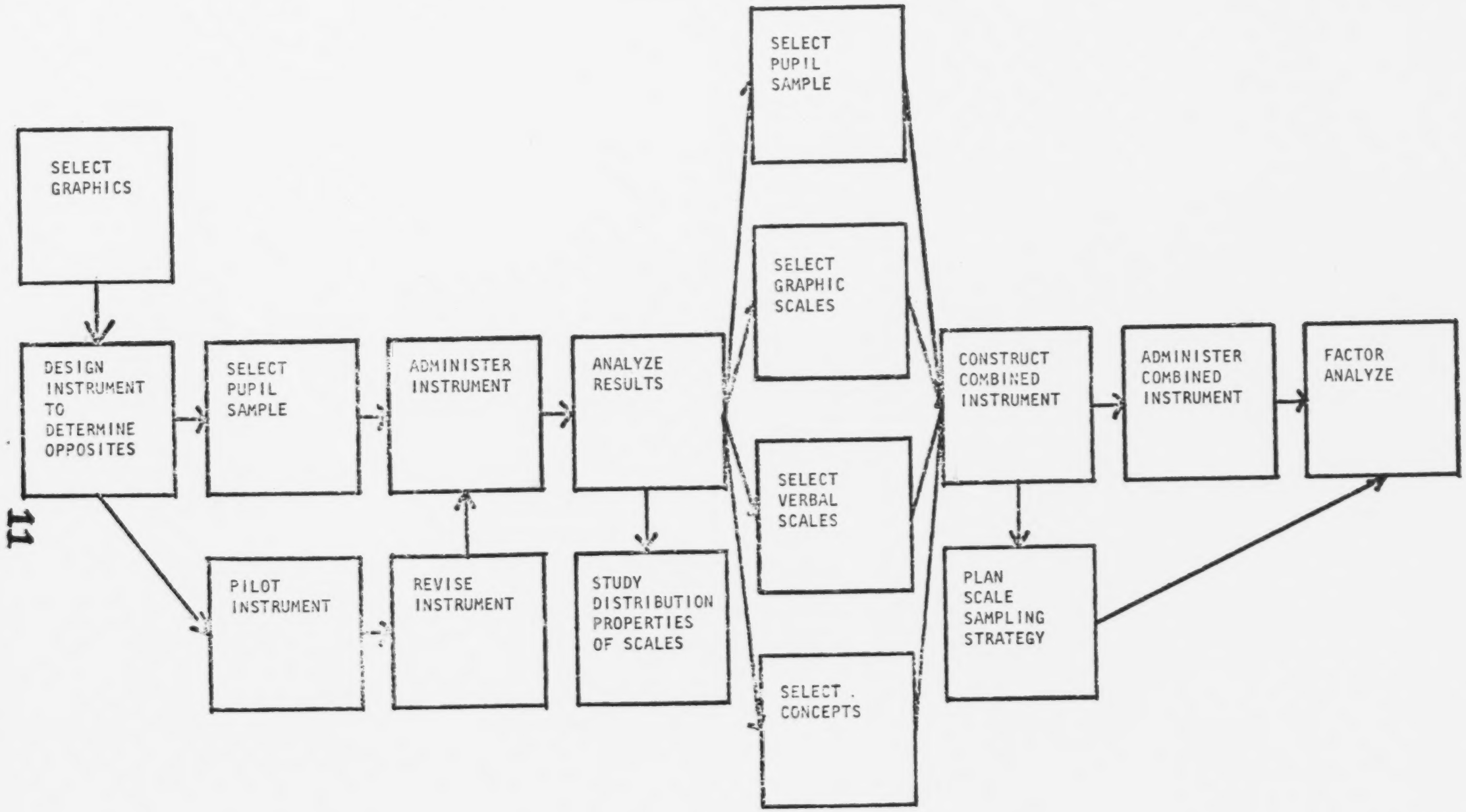
3. DETERMINE ADJECTIVE PAIRS



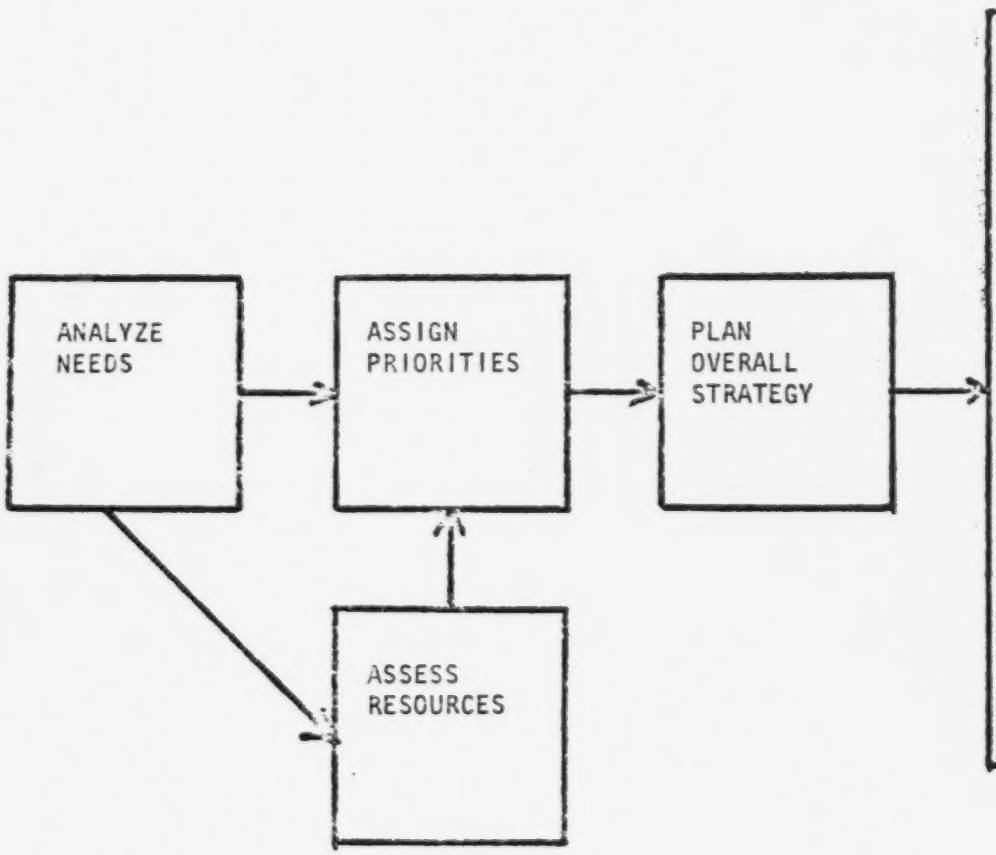
4. FACTOR SCALES


DECIDE ON POPULATION STRATIFICA-TIONS
SELECT PUPIL SAMPLE
SELECT CONCEPTS TO BE USED
PLAN OVERALL APPROACH
ASSIGN SCALE PACKAGES TO CONCEPTS
DECIDE ON PAGE COMBINATIONS
HAVE INSTRUMENT PRINTED AND COLLATED
ADMINISTER INSTRUMENT TO PUPIL SAMPLE
REDUCE DATA TO CARDS
SUBMIT SCALES TO FACTOR ANALYSIS
ARRANGE ADJECTIVE PAIRS INTO SCALE PACKAGES
PLAN FACTORING STRATEGY
WRITE PROGRAM TO FACTOR SCALES
TEST PROGRAM

5. FACTOR GRAPHIC SCALES



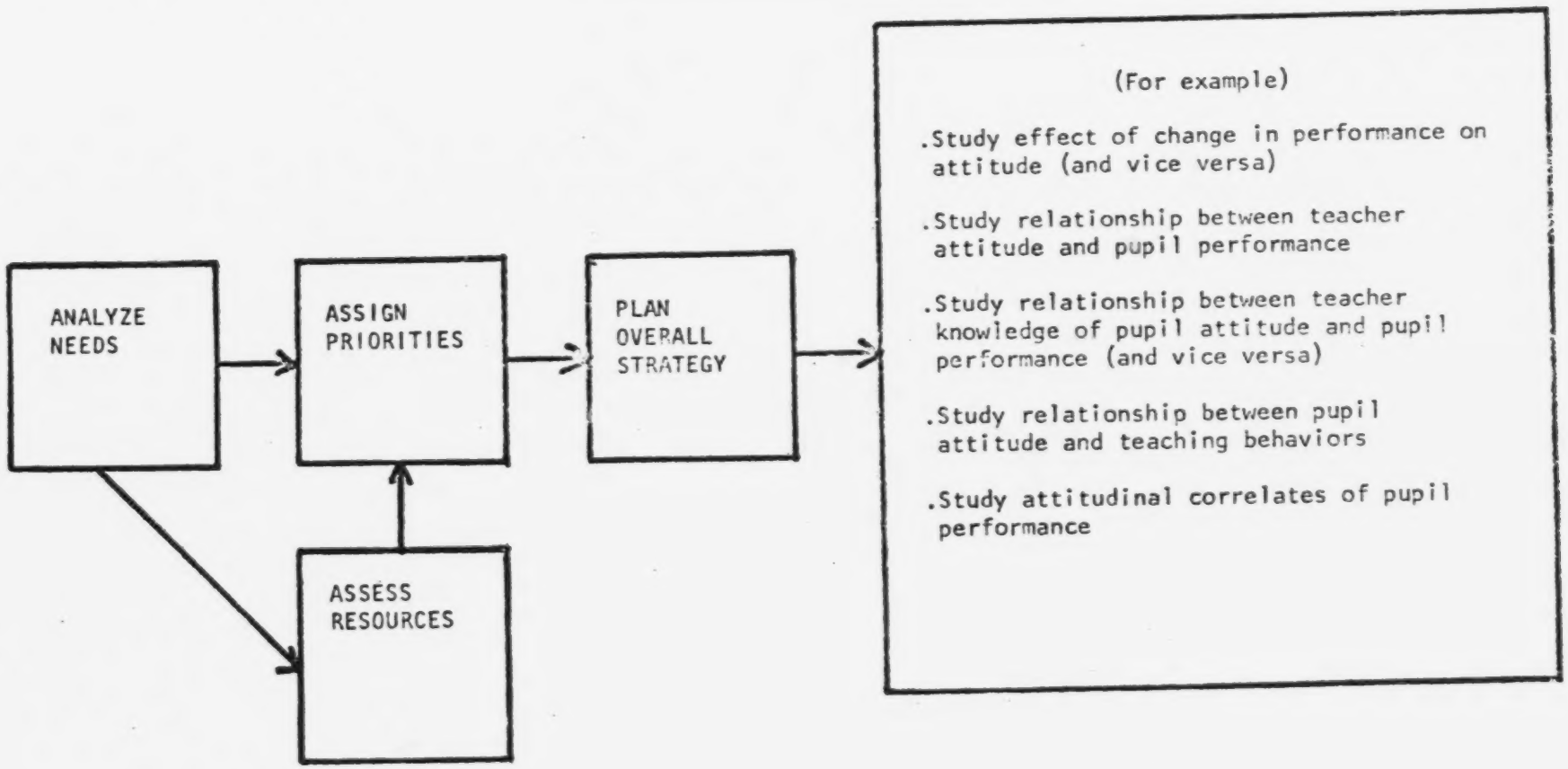
6. STUDY THE PSYCHOMETRIC PROPERTIES OF THE INSTRUMENT (PRELIMINARY)



(For example)

- .Study reliability
- .Study effect of scale width
- .Study scale concept interaction
- .Study effect of anonymity
- .Study ability to use connotative scales
- .Study effect of age
- .Study effect of achievement level
- .Study effect of socioeconomic level
- .Study effect of response set
- .Study effect of social desirability on response patterns

7. STUDY RELATIONSHIPS BETWEEN ATTITUDE AND LEARNING (PRELIMINARY)


ANALYZE NEEDS
ASSIGN PRIORITIES
PLAN OVERALL STRATEGY
ASSESS RESOURCES
(For example)
.Study effect of change in performance on attitude (and vice versa)
.Study relationship between teacher attitude and pupil performance
.Study relationship between teacher knowledge of pupil attitude and pupil performance (and vice versa)
.Study relationship between pupil attitude and teaching behaviors
.Study attitudinal correlates of pupil performance

8. DEVELOP SEMANTIC ATLAS (PRELIMINARY)